

Claims

1. Cysteine containing peptides of the structure
 XXCCXXXXXXXXCXXXCXXXXXXXXQXXCXXXCXCCCCXXCXXXXXX
 5 or of the structure
 XXCCXXXXXXXXCXXXCXXXXXXXXXXCXXXCXCCCCXXCXXXXXX
 or of the structure
 XXCCXXXXXXXXCXXXCXXXXXXXXXXCXXXCXCCCCXXCXXXXXX,
 wherein X, independently of one another, represents any naturally occurring
 10 amino acid.

2. Cysteine containing peptides according to claim 1, wherein at position 15 the
 amino acid G and/or at position 19 the amino acid T and/or at position 23 the
 amino acid Q and/or at position 27 the amino acid Q and/or at position 28 the
 15 amino acid R and/or at position 31 the amino acid D and/or at position 33 the
 amino acid I and/or at position 34 the amino acid H and/or at position 35 the
 amino acid V and/or at position 36 the amino acid T and/or at position 37 the
 amino acid T and/or at position 38 the amino acid T and/or at position 43 the
 amino acid S and/or at position 44 the amino acid H and/or at position 46 the
 20 amino acid S is located.

3. Cysteine containing peptides according to one of the previous claims, namely
 KSCCRNTLGRNCYNGCRFTGGSQPTCGRLCDCIHVTTTTCPSSHPS
 (hellethionin-A),
 25 KSCCRNTLGRNCYNACRFTGGSQPTCGRLCDCIHVTTTTCPSSHPS
 (hellethionin-B1),
 KSCCRNTLARNCYNACRFTGGSQPTCGRLCDCIHVTTTTCPSSHPS
 (hellethionin-B2),
 KSCCRNTLGRNCYNACRLPGTPQPTCATLDCIHVTTPTCPSSHPR
 30 (hellethionin-B3),
 KSCCRNTLARNCYNACRFTGTSQPYCARLDCIHVTTPTCPSSHPR
 (hellethionin-B4),
 KSCCRNTLARNCYNACRFTGGSQPTCATLDCIHVTTPTCPSSHPR

- (hellethionin-B5),
 KSCCRNTLARNCYNVCRFGGGSQAYCARFCDCIHVTTSTCPSSHPS
 (hellethionin-B6),
 KSCCRNTLGRNCYNACRLTGTSQATCATLCDCHVTATTCPPPYPS
 5 (hellethionin-C),
 KSCCRNTLARNCYNACRFTGGSQPTCGILCDCIHVTTTTCPSSHPS
 (hellethionin-D),
 KSCCRNTLGRNCYAAACRLTGLFSQEQCARLCDCHVTTPPCPRTHPS
 (hellethionin-E1),
 10 KSCCRNTLGRNCYAAACRLTGTFSEQEQCARLCDCHVTTPPCPRTHPS
 (hellethionin-E2).
4. Nucleic acid sequence, which encodes a cysteine containing peptide compound according to one of the previous claims.
 - 15 5. RNA sequence and anti-sense RNA according to claim 4.
 6. DNA sequence and anti-sense DNA according to claim 4.
 - 20 7. Ester derivatives, amide derivatives, halogen derivatives, methyl derivatives, salt derivatives, cyclic derivatives and derivatives with a modified backbone of the peptides according to one of the claims 1 to 3.
 8. DNA vector or DNA construct, which contains a DNA sequence according to claim 6.
 - 25 9. Monoclonal antibodies targeted against an epitope of the cysteine containing peptides according to one of the claims 1 to 3.
 - 30 10. Use of cysteine containing peptides according to one of the claims 1 to 3, of mixtures of these cysteine containing peptides and of functional derivatives of these peptides for the treatment of diseases.

11. Use of cysteine containing peptides according to one of the claims 1 to 3, of mixtures of these cysteine containing peptides and of functional derivatives of these peptides for the treatment of diseases caused by pathogens.
- 5 12. Use of cysteine containing peptides according to one of the claims 1 to 3, of mixtures of these cysteine containing peptides and of functional derivatives of these peptides for the treatment of diseases caused by bacteria, fungi or viruses.
- 10 13. Use of cysteine containing peptides according to one of the claims 1 to 3, of mixtures of these cysteine containing peptides and of functional derivatives of these peptides for the treatment of diseases of humans and animals, particularly of horses.
- 15 14. Use of cysteine containing peptides according to one of the claims 1 to 3, of mixtures of these cysteine containing peptides and of functional derivatives of these peptides for the treatment of diseases, which are caused by defective bioregulation of the immune system or are accompanied by a defective bioregulation of the immune system.
- 20 15. Use of cysteine containing peptides according to one of the claims 1 to 3, of mixtures of these cysteine containing peptides and of functional derivatives of these peptides for the treatment of autoimmune diseases.
- 25 16. Use of cysteine containing peptides according to one of the claims 1 to 3, of mixtures of these cysteine containing peptides and of functional derivatives of these peptides for the treatment of cancers.
- 30 17. Use of cysteine containing peptides according to one of the claims 1 to 3, of mixtures of these cysteine containing peptides and of functional derivatives of these peptides for the treatment of AIDS.

18. Pharmaceutical composition, comprising one or more cysteine containing peptides according to claims 1 to 3 and/or functional derivatives of these peptides.
- 5 19. Pharmaceutical composition according to claim 18, comprising one or more cysteine containing peptides according to claims 1 to 3 and/or functional derivatives of these peptides and at least one carbon suboxide derivative.
- 10 20. Cysteine containing peptides according to one of the claims 1 to 3, mixtures of these cysteine containing peptides, functional derivatives of these peptides and/or pharmaceutically acceptable salts of these cysteine containing peptides for the preparation of a pharmaceutical formulation for the treatment of diseases.
- 15 21. Cysteine containing peptides according to one of the claims 1 to 3, mixtures of these cysteine containing peptides, functional derivatives of these peptides and/or pharmaceutically acceptable salts of these cysteine containing peptides for the preparation of a pharmaceutical formulation for the treatment of diseases caused by pathogens.
- 20 22. Cysteine containing peptides according to one of the claims 1 to 3, mixtures of these cysteine containing peptides, functional derivatives of these peptides and/or pharmaceutically acceptable salts of these cysteine containing peptides for the preparation of a pharmaceutical formulation for the prophylaxis and/or treatment of cancer.
- 25 23. Cysteine containing peptides according to one of the claims 1 to 3, mixtures of these cysteine containing peptides, functional derivatives of these peptides and/or pharmaceutically acceptable salts of these cysteine containing peptides for the preparation of a pharmaceutical formulation for the prophylaxis and/or treatment of cancer, wherein the concerned cancer is chosen from the group comprising choroidal melanoma, acute leukaemia, acoustic neurinoma, ampullary carcinoma, anal carcinoma, astrocytoma,
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- basal cell carcinoma, pancreatic cancer, bladder cancer, bronchial carcinoma, breast cancer, Burkitt's lymphoma, corpus cancer, CUP-syndrome, colorectal cancer, small intestine cancer, small intestinal tumors, ovarian cancer, endometrial carcinoma, ependymoma, epithelial cancer
- 5 types, Ewing's tumors, gastrointestinal tumors, gallbladder cancer, uterine cancer, cervical cancer, glioblastomas, gynecologic tumors, throat, nose and ear tumors, hematologic neoplasias, hairy cell leukemia, urethral cancer, skin cancer, brain tumors (gliomas), brain metastases, testicle cancer, lymph node cancer (Hodgkin's/Non-Hodgkin's), hypophysis tumor, carcinoids, Kaposi's
- 10 sarcoma, laryngeal cancer, germ cell tumor, bone cancer, colorectal carcinoma, head and neck tumors, colon carcinoma, craniopharyngiomas, oral cancer (cancer in the mouth area and on lips), liver cancer, liver metastases, leukaemia, eyelid tumor, lung cancer, lymphomas, stomach cancer, malignant melanoma, breast carcinoma, rectal cancer,
- 15 medulloblastomas, melanoma, meningiomas, Hodgkin's disease, mycosis fungoides, nasal cancer, neurinoma, kidney cancer, non-Hodgkin's lymphomas, oligodendroglioma, esophageal carcinoma, osteosarcomas, ovarial carcinoma, pancreatic carcinoma, penile cancer, plasmocytoma, prostate cancer, pharyngeal cancer, rectal carcinoma, retinoblastoma,
- 20 vaginal cancer, thyroid carcinoma, Schneeberger disease, esophageal cancer, spinal glioma, T-cell lymphoma (mycosis fungoides), thymoma, tube carcinoma, eye tumors, urethral cancer, urologic tumors, urothelial carcinoma, vulva cancer, wart appearance, soft tissue tumors, Wilm's tumor, cervical carcinoma and tongue cancer.
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24. Cysteine containing peptides according to claim 23, wherein the concerned cancer is chosen from the group comprising bladder cancer, breast cancer, cancer of the central nervous system, colon cancer, stomach cancer, lung cancer, skin cancer, head and neck cancer, ovarian cancer, cervical cancer,
- 30 glioblastomas, prostate cancer, testicular cancer, leukaemia, liver cancer, kidney cancer and epithelial cancer types.

25. Pharmaceutical, containing one or more cysteine containing peptides according to claims 1 to 3 and/or functional derivatives of these peptides.
- 5 26. Pharmaceutical according to claim 25, containing one or more cysteine containing peptides according to claims 1 to 3 and/or functional derivatives of these peptides and at least one carbon suboxide derivative.
- 10 27. Pharmaceutical according to claim 25 or 26, containing one or more cysteine containing peptides according to claims 1 to 3 and/or functional derivatives of these peptides and at least one cytostatically and/or cytotoxically active compound.
- 15 28. Method for the extraction of the cysteine containing peptides according to claims 1 to 3 by extraction from the *Helleborus* plant species.
29. Method according to claim 28, wherein a defatting of the plant material using non-polar solvents is carried out as first step of the method, particularly using tert.-butylmethylether.
- 20 30. Method for the extraction of the cysteine containing peptides according to claims 1 to 3 by gene technological methods.
- 25 31. Method according to claim 30, wherein the thionine genes of a thionine producing corn are replaced by the thionine genes of species of the plant *Helleborus*.
- 30 32. Method for the synthetic extraction of the cysteine containing peptides according to claims 1 to 3 and of functional derivatives of these peptides by peptide synthesis.